

CLAIMS

1. An engine equipped for deactivation and reactivation of a select number of cylinders by selectively deactivating opening of intake and exhaust valves of cylinder groups intended to be deactivated, the engine comprising:
 - 5 separate air intake throttles including at least one throttle for each cylinder group to be selectively deactivated and at least throttle one for each cylinder group intended to remain activated; and
 - a control for selectively actuating the throttles of the various cylinder groups, the control being operative during cylinder deactivation to
 - 10 actuate the throttles, prior to deactivation of the valves of a cylinder group to be deactivated, to smoothly transfer engine torque load from the cylinder group to be deactivated to a cylinder group to remain activated.
2. An engine as in claim 1 wherein the control is operative during cylinder deactivation to transfer the torque load by concurrently and progressively closing the at least one throttle of a group of cylinders to be deactivated and further opening the at least one throttle of a group of
 - 5 cylinders to remain activated.
3. An engine as in claim 1 wherein the control is operative during cylinder reactivation to actuate the throttles of the various cylinder groups, after reactivation of the valves of the previously deactivated group of cylinders, to smoothly transfer a desired portion of the torque load from the
 - 5 group of cylinders that remained activated to the previously deactivated group of cylinders.

4. An engine as in claim 2 wherein the control is operative during cylinder reactivation to transfer the torque load by concurrently and progressively opening the at least one throttle of a group of cylinders to be reactivated and partially closing the at least one throttle of a group of
5 cylinders to remain activated.

5. An engine as in claim 1 including a supercharger connected with cylinders to remain activated, the supercharger being selectively operable during deactivation of the other cylinders to boost the torque of the activated cylinders when needed to provide increased engine torque without
5 reactivation of the deactivated cylinders.

6. An engine as in claim 5 wherein the supercharger is a turbocharger driven by engine exhaust gas.

7. An engine as in claim 5 wherein the supercharger is electrically driven.

8. A method of operating an engine equipped for deactivation of intake and exhaust valves of at least one group of cylinders with operation of the engine by an other group of activated cylinders, the method comprising:
prior to valve deactivation, smoothly transferring the engine
5 torque load of the one group to the other group of cylinders by concurrently and progressively closing a throttle of the one group of cylinders to be deactivated and further opening a throttle of the other group of cylinders to remain activated.

9. A method as in claim 8 including, after valve reactivation, smoothly transferring a suitable portion of the engine torque load from the other group to the one group of cylinders by concurrently and progressively opening a throttle of the one group of cylinders to be reactivated and
5 partially closing a throttle of the other group of cylinders to remain activated.

10. A method as in claim 9 including selectively increasing the torque range of the engine, during operation with the one group of cylinders deactivated, by boosting the cylinder air charge pressure of the other group of cylinders remaining activated, the pressure boost being controlled to
5 provide extended operation during cylinder deactivation over a limited range of increased torque without requiring reactivation of the one group of deactivated cylinders.